Tactical Combat Casualty Care

August 2010

Direct from the Battlefield: TCCC Lessons Learned in Iraq and Afghanistan

TCCC Lessons Learned in Iraq and Afghanistan

- Reports from Joint Theater Trauma System (JTTS) weekly Trauma Telecons
  - Every Thursday morning – worldwide telecon to discuss every serious casualty from that week
- Published medical re
- Armed Forces Medica
  Examiner's Office re
- Feedback from docto
  corpsmen, medics,
  and PJs

Train ALL Combatants in TCCC

- **Potentially preventable deaths averaging about 20% of all fatalities**
- **Units that train all members in TCCC have drastically reduced this incidence**
- **Need to train <u>ALL</u> combatants in TCCC**

Fatal Extremity Hemorrhage

This casualty was wounded by an RPG explosion and sustained a traumatic amputation of the right forearm at the mid-forearm level and a right leg wound. He bled to death from his leg wound despite the placement of three field-expedient tourniquets.

<u>What could have saved him</u>

C.A.T. Tourniquet

TCCC training for all unit members

<u>*Note: Medic killed at</u>

Tourniquets

- **Get tourniquets on BEFORE onset of shock**
  - **Mortality is very high if casualties already in shock before tourniquet application**
- **If bleeding is not controlled and distal pulse not eliminated with first tourniquet – use a second one just proximal to first**
  - **Increasing the tourniquet W with a**

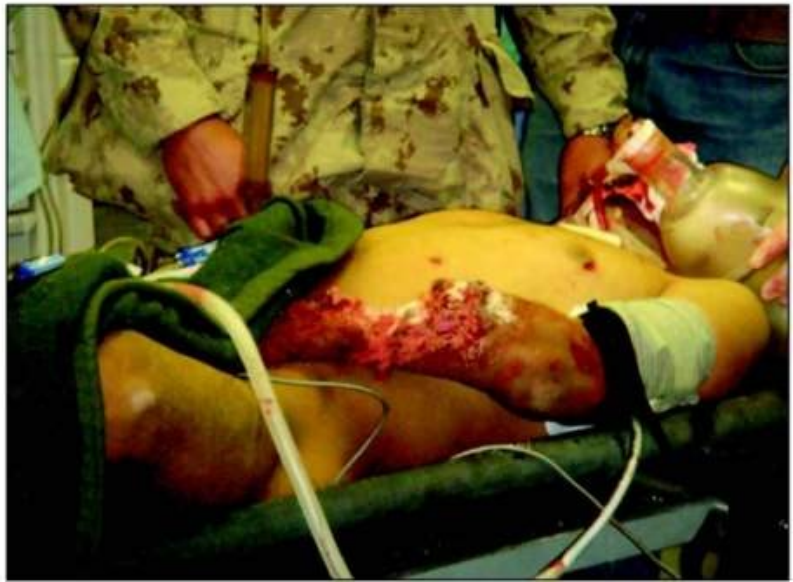
    second tourniquet controls

Tourniquet Case Report Afghanistan – Nov 2009

- Soldier with gunshot wound to left leg
- Open fracture left femur
- Injury to popliteal artery and vein
- Three CAT tourniqu
  placed
- Life saved
- Leg doing well
- 2-3 casualties/week
  saved with tournic

Tourniquets

- **Tighten velcro band on tourniquets as tight as possible before starting to use windlass – a loose velcro band contributes to tourniquet malfunction**
  - **Should be effective w**
    approximately thre
    degree turns of win
  - **Use second tourniqu**
    needed



Tourniquets

- **Fake CAT tourniquets that are prone to malfunction are turning up in theater – ensure that you have this NSN tourniquet:**
- **NSN 6515-01-521-7976**

Counterfeit CAT Tourniquets

DEFENSE LOGISTICS AGENCY
DEFENSE SUPPLY CENTER PHILADELPHIA
700 ROBBINS AVENUE
PHILADELPHIA, PENNSYLVANIA 19111-5092

IN REPLY REFER TO

DSCP-FSFB 10-150 April 14, 2010

MEMORANDUM FOR USAMMA, NAVMEDLOGCOM, AFMLO, MARCORSYSCOM, DMMPO,

SUBJECT: QUALITY ASSURANCE URGENT PRODUCT SAFETY ALERT.

1. REFERENCES:

A. ITEM: Tourniquet, Nonpneumatic; C-A-Tourniquet®. NSN 6515-01-521-7976.
B. Item No(s): NAR-CAT, 30-0001 Serial/Lot No(s): N/A
C. Manufacturer: Composite Resources, Inc., 485 Lakeshore Parkway, Rock Hill, SC
D. Distributors:
North American Rescue Inc., 35 Tedwall Court, Greer, SC;
Cardinal Health, 1430 Waukegan Road, McGaw Park, IL;
Owens and Minor, 9120 Lockwood Blvd, Mechanicsville, VA;
American Purchasing Services (DBA American Medical Depot) 4380 NW 135th St, Opa Locka, FL;
Phoenix Textile Corporation, 21 Commerce Drive, O'Fallon, MO
E. Authorized for procurement through DoD Supply Chain Only.

2. SAFETY ALERT: CRITICAL LIFE-SAVING ITEM.

Counterfeit CAT Tourniquets

2. SAFETY ALERT: CRITICAL LIFE-SAVING ITEM.

A. REASON: DLA has become aware of similar products manufactured to closely resemble the C-A-Tourniquet® and available for purchase through non-DoD websites. Authorized DoD procurement gateways will supply only the approved commercial part from authorized distributors. These products were first encountered several years ago in a depot in Afghanistan and thought to have been purged from the system. They were then of obvious inferior construction and quite recognizable as a substitute for the real thing. Today the product is very difficult to distinguish from the C-A-Tourniquet® down to duplicate markings and symbols.

Although there is no direct evidence against these duplicate products, several reports indicate that they are of inferior design and may cause serious injury or death.

B. RECOMMENDED STRATEGY: The above distributors, supplying the Composite Resources product exclusively, are the only authorized source for this device.

The FDA regulates this product as a Class 1 device, which means that there is no requirement for a premarket notification application and FDA clearance is not required before marketing the device in the U.S. However, these manufacturers are required to register their establishment with FDA.

If you have purchased these devices from any other source, it is recommended that they be suspended from use and replaced by the recommended product. Please report suspended quantities to your logistical supply office.

Some examples of non-authorized Internet sources for duplicate product that may be hazardous are: www.world-element.com; ID No. EX 159; and http://www.airsoftglobal.com/product_info.php?products_id=11454; ID EL-ACC-EX159-AG.

CAT (GEN III) vs. F-CAT

Executive Summary

Introduction:

1. The Element Cat (E-CAT) is a very carefully made counterfeit CAT tourniquet.
2. It is manufactured in Hong Kong for $8.50 (USD) per item.
3. There are no limits to the number that can be purchased.
4. They are available on the internet, and anyone can purchase them.
5. They were designed to look, feel and act like a CAT (GEN III).
6. They ARE a counterfeit tourniquet.

CAT (GEN III) vs. F-CAT

Executive Summary

CAT (GEN III)

Package from NARP, Inc. Looks nothing like the F-CAT package.

E-CAT:

Packaged in plastic bag with paper top.

The sticker on the bag call the tourniquet the "Combat Application Tourniquet" and lists the NSN assigned to NARP.

CAT

E-CAT

CAT Generation VI

10/06/2009

Length of Tourniquet changed to 37 ½”
Manufacturer and Lot Stamp with date manufactured added to the strap

Ft. Hood Shootings 2009 Officer Kim Munley

- 12 dead; 31 wounded on 5 Nov 09
- Officer Munley got shooter; shot in both thighs
- Direct pressure and makeshift tourniquets used by several physicians unsuccessful at controlling hemorrhage – went into shock
- Saved by Army 68W medic with a CAT tourniquet on left thigh

Tourniquet on Uninjured Arm

- JTTS Trauma Telecon 8 April 2010
- IED casualty
- Arrived at Kandahar with CAT in place on left arm
- Evaluation: no injuries sustained on left arm
- Follow-up: No explanation available
- Lessons Learned:
  - No injury – No tourniquet
  - Remember to reassess your casualties

Wear Your Eye Protection!

- Jan 2010
- 22 y/o near IED without eye protection
- Now blind in both eyes
- Don't let this happen to you – see

th eye pro – eyes OK

Without eye pro – both eyes being re

Penetrating Eye Trauma

- **Rigid eye shield for obvious or suspected eye wounds - often not being done – SHIELD AND SHIP!**
- **Not doing this may cause permanent loss of vision – use a shield for any injury in or around the eye**
- **, always**

Shield after injury

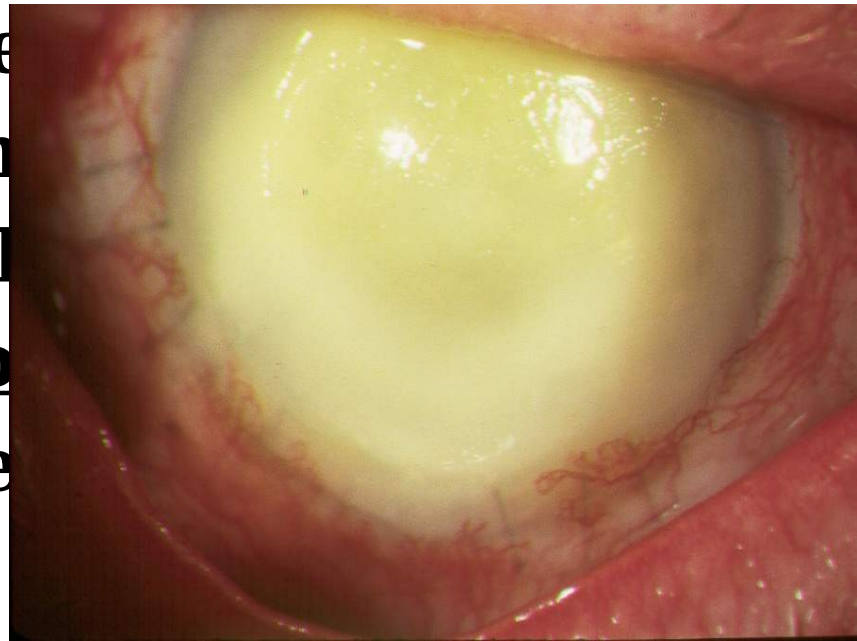
No shield after injury

Eye Protection

- **Use your tactical eyewear to cover the injured eye if you don’t have a shield.**
- **Using tactical eyewear in the field will generally prevent**

JTTS Trauma Telecon 9 Sept 2010

- **Recent case of endophthalmitis**
- **Reminder – shield and moxifloxacin in the field**
  for penetrating eye injuries
- **Also – need to continue**
  moxi both topically an
  systemically in the MT
- **Many antibiotics <u>do no</u>**
  <u>penetrate well</u> into the
  eye



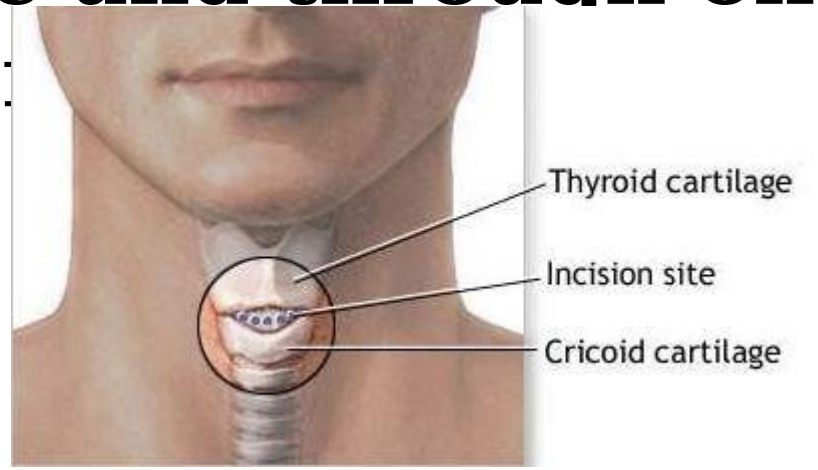
Patched Open Globe 22 July 2010

- **Shrapnel in right eye from IED**
- **Had rigid eye shield placed**
- **Reported as both pressure patched and as having a gauze pad placed under the fox shield without pressure**
- **Extruded uveal tissue noted at time of operative repair of globe**
- **No gauze! COL Robb Mazzoli: Gauze can adhere to iris tissue and cause further extrusion when removed <u>even if no pressure is applied to eye.</u>**

Surgical Airways

Joint Theater Trauma System Email 24 September 09

- **3 field crics done incorrectly in OIF**
- **One through center of thyroid cartilage and through one of the vocal co**



Surgical Airways: The Rest of the Story

"The setting of the casualty care was at night in a non-permissive environment. The medic had sustained a sacral injury and damaged his NVG's during a hard landing on infil. The casualty had sustained a gunshot wound to the jaw. The medic was not called to the scene for ten minutes due to an ongoing firefight. The jaw was shattered and he had heavy maxillofacial bleeding. The recovery position was attempted repeatedly, but the casualty refused to remain like that. Anxiolysis was attempted with Versed to facilitate maintaining the airway with position alone, but did not work. The casualty became increasingly combative and the decision was made to perform the cric out of fear of completely losing the airway during evacuation. Due to the fact that the medic's NVGs were damaged, an operator (former 18D with two successful prior combat cric's) attempted the procedure with assistance by the

Surgical Airways

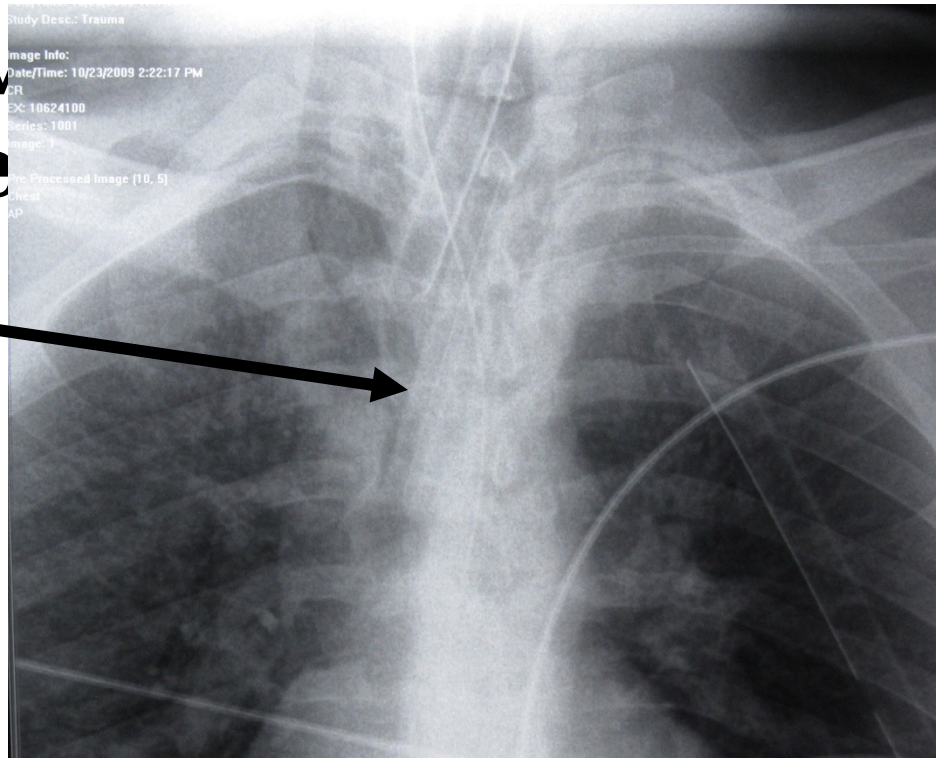
Recommendations:

- **Live tissue training for this procedure if possible**
- **“Sim Man” trainer may be second-best option**
- **Don’t attempt surgical airway just because the casualty is uncon**
- **Try the “sit-up and lean forwa position prior to attempting a airway**

Surgical Airways

If you cut the endotracheal Tube, you must tape it very securely or the tube will slip down into the trachea, cease to function correctly, and hav surgically remove

Like this one…..



IED Casualties

- **IED blast casualties often have multiple mechanisms of injury**
  - **Blunt trauma**
  - **Penetrating trauma**
  - **Blast**
  - **Burns**
- **Majority of casua**
  are now from I

IED Casualties

- **IED casualties – many have spinal fractures,**

  especially thoracic

- **Try to maintain spinal alignment in blunt**

  trauma casualti

IED Casualties

- **IED events – be alert for secondary IEDs or ground assaults after initiation of the IED**

Do Aviation Personnel Need TCCC?

In-Flight Tourniquet

24 June 2010

- AF Pave Hawk pilot on EVAV mission to pick up wounded UK soldier
- GSW both legs
- Severe bleeding R leg
- PJ crawled up into cockpit and applied tourniquet
- Bleeding controlled – pilot completed mission

JTTS Trauma Telecon 26 Aug 2010

- 23 y/o male
- GSW left infraclavicular area with external hemorrhage
- “Progressive deterioration”
- External hemorrhage noted to increase as casualty resuscitated in ED
- No record of Combat Gauze use
- All injuries noted to be extrapleural
- Lesson learned: see following slide

Combat Gauze

It doesn’t work if you don’t use it

FEEDBACK TO THE FIELD:

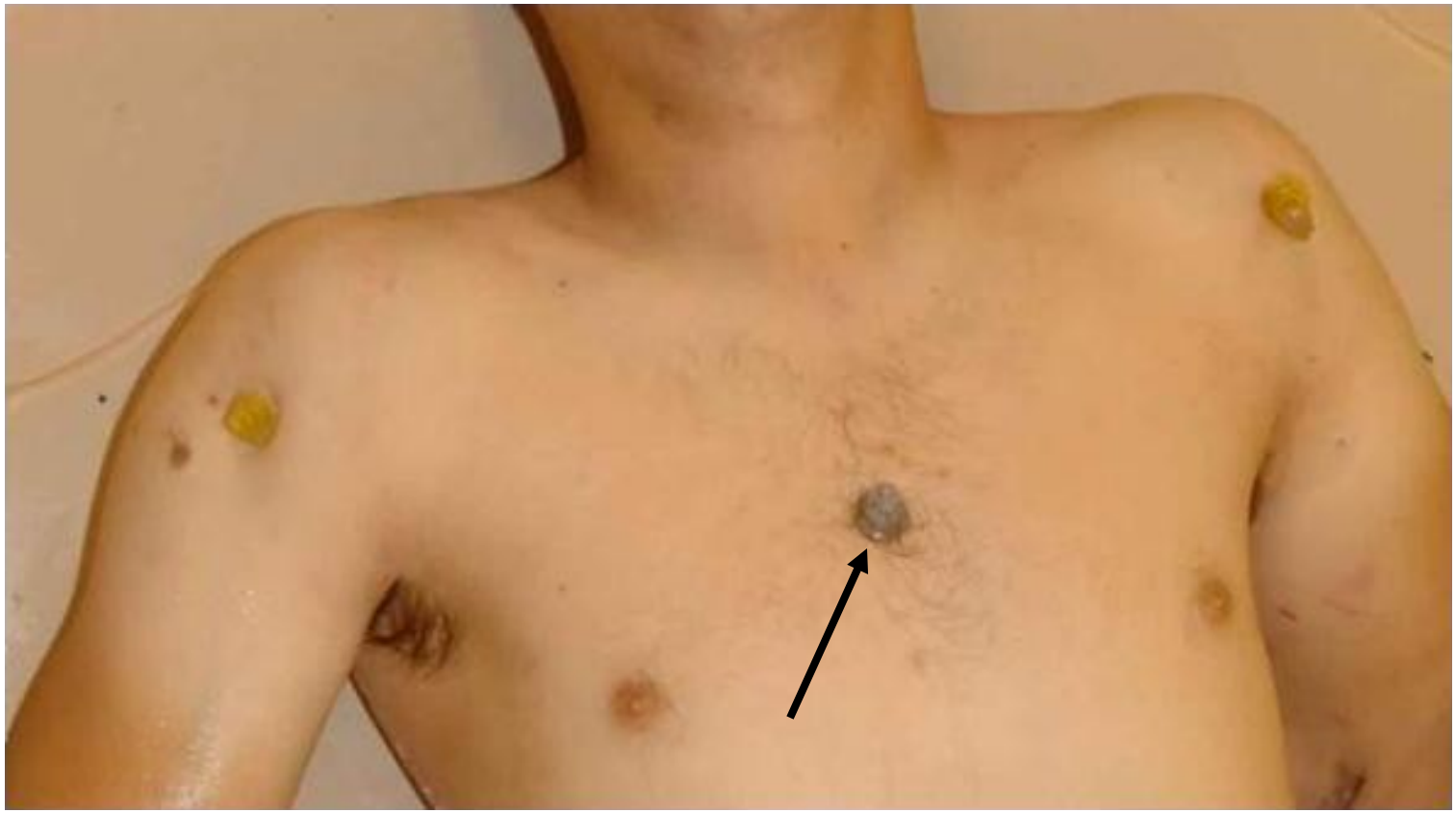
Perforation of the Sternum by an Intraosseous Infusion Device

H T Harcke, COL, MC, USA
Chief, Forensic Radiology
Armed Forces Institute of Pathology

E Mazuchowaski, Lt Col (Sel), USAF, MC
Deputy Medical Examiner
Office of the Armed Forces Medical Examiner

CASE OVERVIEW

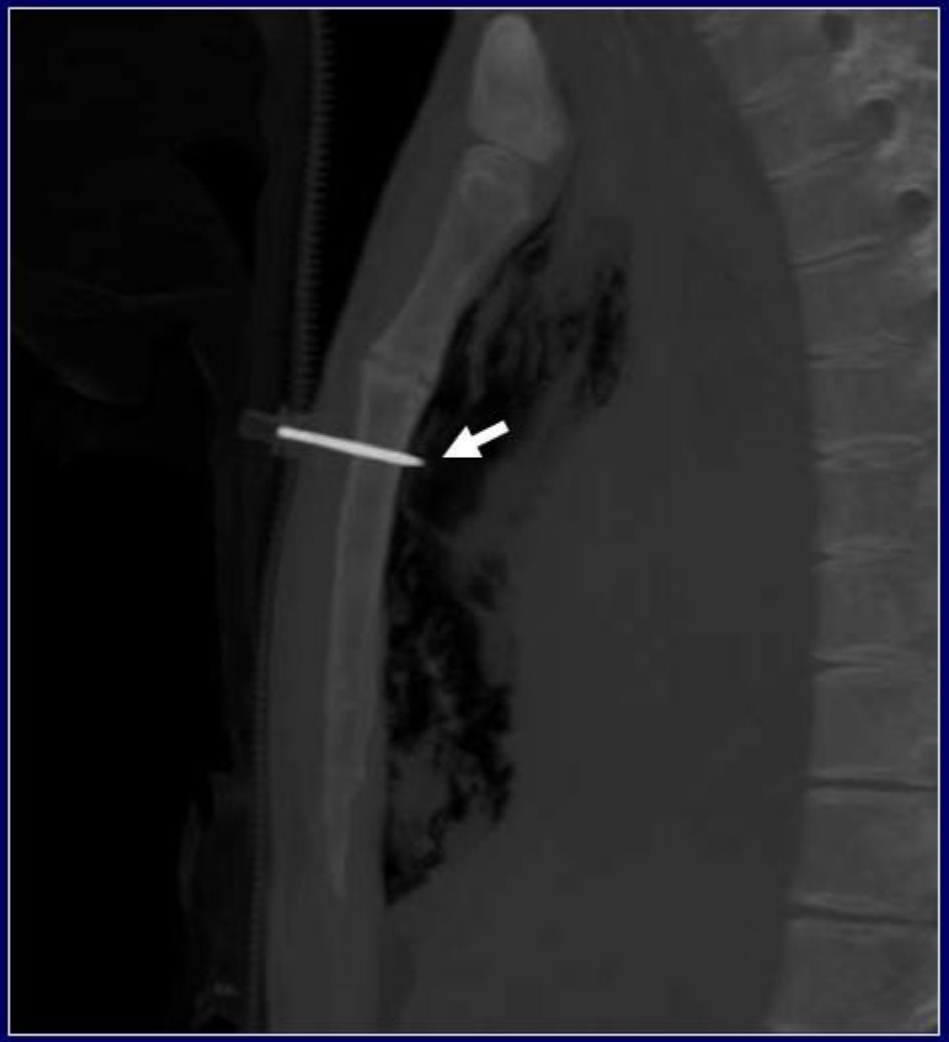
- IED detonated in the decedent's vicinity.
- Catastrophic injury to the lower extremities and pelvis, to include traumatic amputation of the lower legs.
- Emergency treatment included tourniquets, sternal IO-IV, and proximal humeral IO-IV's.



Note sternal IO in place

Autopsy CT Scan

Sagittal MDCT image shows the IO-IV needle passes through the sternum with the tip in the anterior mediastinum (arrow).



s is NOT where you want the infused fluids to g

Comparison of the devices:

Note size, color and packaging differences.

Do you really want to try to tell these two IO needles apart in the dark in a

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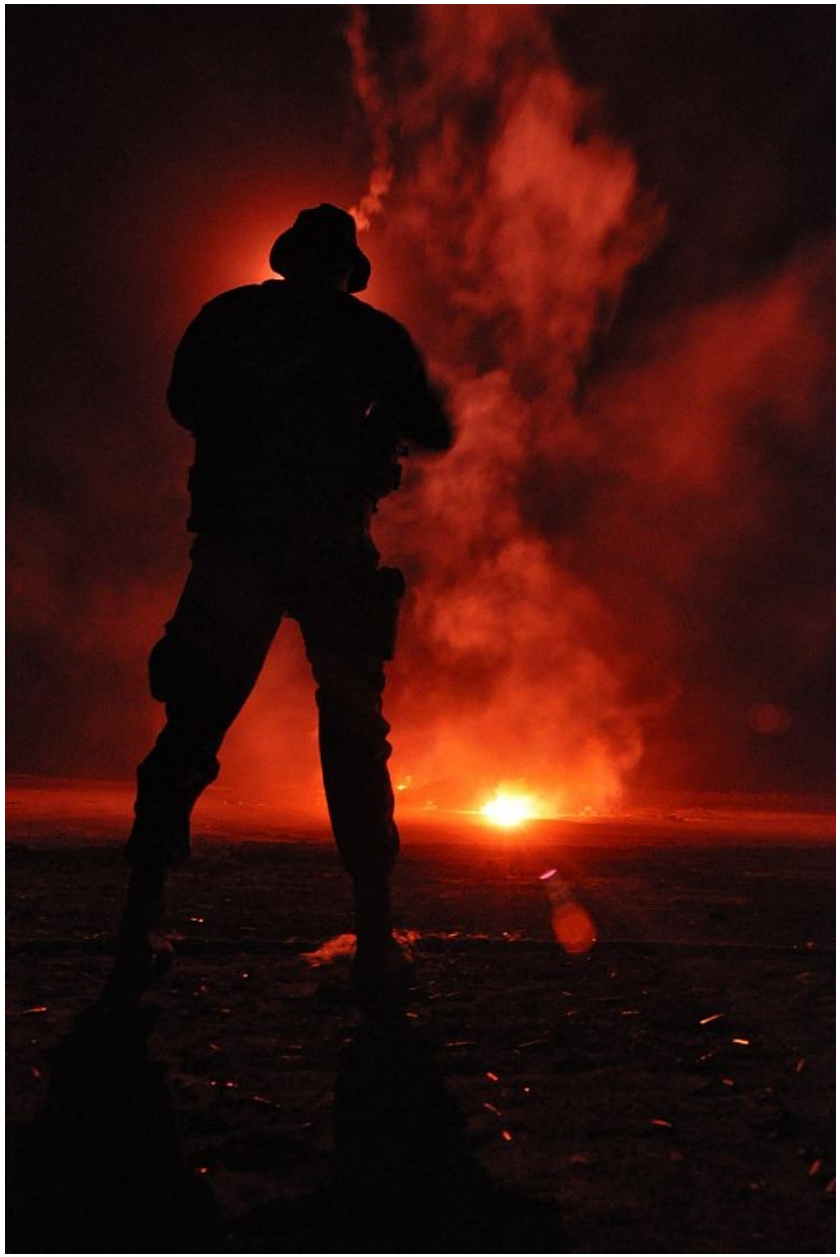

Questions?